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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,790	07/02/2003	Behnam Pourdeyhimi	297/180	5458
25297 7590 10/31/2007 JENKINS, WILSON, TAYLOR & HUNT, P. A. 3100 TOWER BLVD., Suite 1200 DURHAM, NC 27707			EXAMINER JONES, HUGH M	
			ART UNIT 2128	PAPER NUMBER
			MAIL DATE 10/31/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/612,790	Applicant(s) POURDEYHIMI, BEHNAM	
	Examiner Hugh Jones	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 August 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 6-15, 17 and 19-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-15, 17 and 19-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>031704, 081705, 020106</u> | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Claims 1-4, 6-15, 17, 19-34 have been presented for examination.

#### *Information Disclosure Statement*

2. The information disclosure statements (IDS) submitted on 3/17/2004, 8/17/2005 and 2/1/2006 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

#### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 6-7, 10-13, 15, 17, 19-20, 22-23 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Jeddi et al. (Measurement of Fiber Orientation In Nonwovens: Optical Fourier Transform) as cited in Applicant's IDS.

Jeddi et al. discloses a computer controlled method for evaluating selected surface and physical optical properties of structures made wholly or partly from fibers, said method comprising the steps of:

Illuminating the surface of a structure (See col. 1, page 10:

- “Over the past few years, we have reported a series of papers dealing with various methods to characterize the structure of nonwovens. A series of publications deal with various instrumentation methods to determine fiber orientation and deal with the use of scattering for the measurement of

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fiber orientation distribution function (ODF) and basis weight in nonwovens [5], as well as image based methods [6-10]. We presented both direct and indirect methods for the measurement of orientation. The indirect methods were based on light scattering,");

Obtaining a digitized image from the illuminated surface of the structure (See col. 1, page 10:

"Over the past few years, we have reported a series of papers dealing with various methods to characterize the structure of nonwovens. A series of publications deal with various instrumentation methods to determine fiber orientation and deal with the use of scattering for the measurement of fiber orientation distribution function (ODF) and basis weight in nonwovens [5], as well as image based methods [6-10]. We presented both direct and indirect methods for the measurement of orientation. The indirect methods were based on light scattering,"); and

Computer processing of the digitized image including use of the Fourier transform (See

col. page 10: "Over the past few years, we have reported a series of papers dealing with various methods to characterize the structure of nonwovens. A series of publications deal with various instrumentation methods to determine fiber orientation and deal with the use of scattering for the measurement of fiber orientation distribution function (ODF) and basis weight in nonwovens [5], as well as image based methods [6-10]. We presented both direct and indirect methods for the measurement of orientation. The indirect methods were based on light scattering,") to create a fiber orientation distribution (ODF) of the fibers on the surface of the imaged fibrous structure (See col. 1, page 10: "Over the past few years, we have reported a series of papers dealing with various methods to characterize the structure of nonwovens. A series of publications deal with various instrumentation methods to determine fiber orientation and deal with the use of scattering for the measurement of fiber orientation distribution function (ODF) and basis weight in nonwovens [5], as well as image based methods [6-10]. We presented both direct and indirect methods for the measurement of orientation. The indirect methods were based on light scattering,").

Jeddi et al. discloses illuminating the surface of a structure with a collimated light source (See

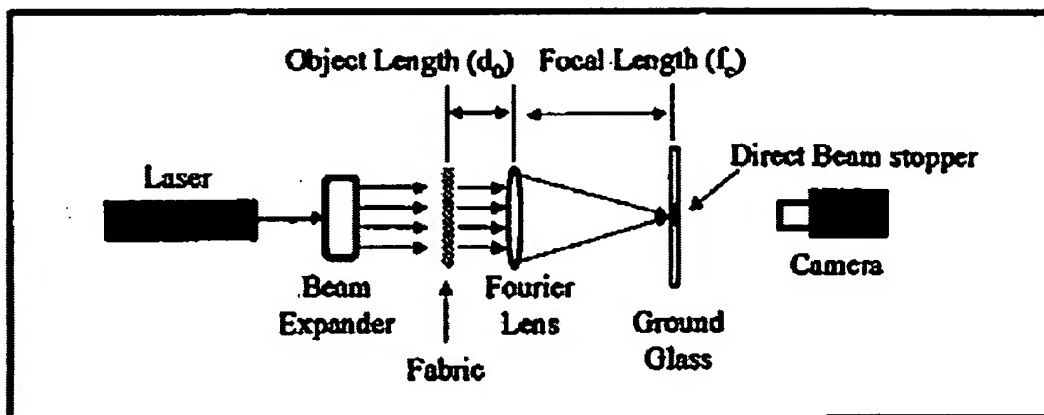
col. 1, page 10: "Over the past few years, we have reported a series of papers dealing with various methods to characterize the structure of nonwovens. A series of publications deal with various instrumentation methods to determine fiber orientation and deal with the use of scattering for the measurement of fiber orientation distribution function (ODF) and basis weight in nonwovens [5], as well as image based methods [6-10]. We presented both direct and indirect methods for the measurement of orientation. The indirect methods were based on light scattering,").

Jeddi et al. discloses computer processing of the digitized image with a Fourier transform algorithm to create a fiber orientation distribution (ODF) of the fibers on the surface of the imaged fiber structure (See col. 1, page 10: "Over the past few years, we have reported a series of papers

dealing with various methods to characterize the structure of nonwovens. A series of publications deal with various instrumentation methods to determine fiber orientation and deal with the use of scattering for the measurement of fiber orientation distribution function (ODF) and basis weight in nonwovens [5], as well as image based methods [6-10]. We presented both direct and indirect methods for the measurement of orientation. The indirect methods were based on light scattering,").

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Particularly note the sections entitled "Fourier Transform" and "Optical Fourier Transform".



**Figure 5**  
**SCHEMATIC OF THE LIGHT SCATTERING SETUP**

As per various fabrics, these constitute nothing more than intended use.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeddi et al., in view of Kim et al., "Characterizing Fuzz in Nonwoven Fabrics," INJ Spring 2000, both cited in Applicant's IDS.

Jeddi et al. disclose the teachings as applied to claims 1-4, 6-7, 10-13, 15, 17, 19-20, 22-23, as discussed earlier.

Jeddi et al. does not disclose expressly determining the property of pilling on the surface of the structure. Kim discloses a method for evaluating a surface made of fibers including obtaining a digitized image of the surface of the structure and determining pilling on the surface of the structure (**page 19 column 1 first full paragraph**).

It would have been obvious to one of ordinary skill in the art of fibrous surface evaluation, at the time of the present invention, to modify Jeddi et al.'s method for evaluating a fibrous surface of a structure with Kim's method of determining pilling on the surface of a structure. The motivation for doing so would have been to improve fabric reliability by using Jeddi et al.'s illumination method on the surface of the structure in order to evaluate pilling on the surface of the fabric (Kim page 18 column 1 paragraph 4-column 2 paragraph 1).

7. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeddi et, in view of Kim et al., "Characterizing Fuzz in Nonwoven Fabrics," INJ Spring 2000, both cited in Applicant's IDS and in further view of the taking of official notice.

Jeddi et al. disclose the teachings as applied to claims 1-4, 6-7, 10-13, 15, 17, 19-20, 22-23, as discussed earlier.

Jeddi et al. does not disclose expressly determining the property of pilling on the surface of the structure. Kim discloses a method for evaluating a surface made of fibers including obtaining a digitized image of the surface of the structure and determining pilling on the surface of the structure (**page 19 column 1 first full paragraph**).

It would have been obvious to one of ordinary skill in the art of fibrous surface evaluation, at the time of the present invention, to modify Jeddi et al.'s method for evaluating a fibrous surface of a structure with Kim's method of determining pilling on the surface of a

structure. The motivation for doing so would have been to improve fabric reliability by using Jeddi et al.'s illumination method on the surface of the structure in order to evaluate pilling on the surface of the fabric (Kim page 18 column 1 paragraph 4-column 2 paragraph 1).

Jeddi et al. further do not expressly disclose setting the incident light at various angles so as to optimally illuminate the fabric.

Official notice is taken that a skilled artisan would apply the light in the most advantageous manner.

8. Claims 28-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeddi et, in view of the taking of official notice.

Jeddi et al. disclose the teachings as applied to claims 1-4, 6-7, 10-13, 15, 17, 19-20, 22-23, as discussed earlier.

Jeddi et al. does not expressly disclose setting the incident light at various angles so as to optimally illuminate the fabric.

Official notice is taken that a skilled artisan would apply the light in the most advantageous manner.

9. Claims 14, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeddi et al. et al., in view of Paulson, Jr., US Patent no. 4,634,280.

Jeddi et al. does not disclose expressly transmitting light from a light source through a diffuser and a beam splitter onto the fibrous structure supported by a mirror. Paulson, Jr. discloses a method of scattering light on yarn in order to measure shape parameters of the yarn, wherein light is transmitted light source through a diffuser and a beam splitter onto the fibrous

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structure supported by a mirror therebeneath to facilitate obtaining the digitized image by a camera positioned above the fibrous structure (**column 3 lines 3-23**).

It would have been obvious to one of ordinary skill in the art of fibrous surface evaluation, at the time of the present invention, to modify Jeddi et al.'s method of evaluating the surface of a fibrous structure with Paulson, Jr.'s optical arrangement for obtaining a digitized image of the fibrous structure. The motivation for doing so would have been to improve knowledge of the fibers used in Jeddi et al.'s method by applying scattered beams of light in order to obtain parameters that characterize the fibers in a more realistic manner (**Paulson, Jr. column 1 lines 23-40**).

#### ***Response to Arguments***

10. Applicant's arguments, filed 8/10/2007, have been carefully considered and are not persuasive. Applicants are thanked for the amendment and arguments.
11. The claim objections are withdrawn in view of the amendment and arguments.
12. The 112 rejections are withdrawn in view of the amendment and arguments.
13. The 101 rejections are withdrawn in view of Applicant's arguments. The practical application is for assessing the quality of a woven/nonwoven structures.
14. The arguments against the art rejections are not persuasive.
15. Applicant's arguments regarding Jeddi et al. and ODF is persuasive. The rejections are withdrawn and new rejections applied.

#### ***Conclusion***

16. Any inquiry concerning this communication or earlier communications from the examiner should be:



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directed to: Dr. Hugh Jones telephone number (571) 272-3781,

Monday-Thursday 0830 to 0700 ET,

*or*

the examiner's supervisor, Kamini Shah, telephone number (571) 272-2279.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, telephone number (703) 305-3900.

**mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

(703) 308-9051 (for formal communications intended for entry)

*or* (703) 308-1396 (for informal or draft communications, please label *PROPOSED* or *DRAFT*).

/Hugh Jones/

Primary Patent Examiner

Art Unit 2128

October 26, 2007

HUGH JONES Ph.D.  
PRIMARY PATENT EXAMINER  
TECHNOLOGY CENTER 2100